

10.0 Glossary

<i>active remediation</i>	The use of active ground water remediation methods such as gradient manipulation, ground water extraction and treatment, or in situ ground water treatment to restore ground water quality to acceptable levels.
<i>acute concentration</i>	The concentration of a contaminant in a medium (air, water, and soil) that would produce an acute exposure. Acute exposure is a single, short-term exposure (usually a day or less) to radiation, a toxic substance, or other stressors that may result in severe biological harm or death.
<i>alluvium</i>	Sediments generally composed of clay, silt, sand, gravel, or similar unconsolidated material deposited by flowing rivers and streams.
<i>ammonia</i>	A nitrogen-based compound that exists in either the un-ionized form (NH ₃) or as the ammonium ion (NH ₄ ⁺).
<i>aquifer</i>	A geologic unit (rock or sediment) that can store and transmit water at rates sufficient to supply reasonable amounts of water to wells and springs.
<i>aquitard</i>	A layer of low-permeability formation immediately above or below an aquifer that retards but does not prevent the flow of ground water to or from the aquifer. It does not readily yield water to wells and springs but may serve as a storage unit for ground water.
<i>background ground water quality</i>	The composition of ground water in areas near the millsite that are geologically similar to the millsite and were not affected by ore-processing activities.
<i>benchmark</i>	An established criterion, known point, or metric used to compare measured or estimated values of chemicals in the environment. Benchmarks generally represent concentrations for a particular medium (e.g., air, soil, water, food) that are acceptable for given receptors (e.g., humans, animals).
<i>benthos</i>	The plants and animals living on the river bottom.
<i>biota</i>	Living organisms.
<i>borrow material</i>	Rock, soil, or other earth materials that are excavated from one location and transported for use at another location, generally for construction purposes (e.g., as fill material).
<i>brine</i>	The USGS classification of water with a TDS concentration of more than 35,000 mg/L. In the EIS, briny water in the basin fill aquifer beneath the Moab site is salty ground water, which became salty mostly from dissolution of evaporite minerals in the Paradox Formation.

<i>chronic concentration</i>	Concentration of a contaminant in an environmental medium (air, soil, and water) that would produce a chronic exposure. A chronic exposure is a continuous or intermittent exposure of an organism to a stressor (e.g., a toxic substance or ionizing radiation) over an extended period of time or significant fraction (often 10 percent or more) of the life span of the organism. Generally, chronic exposure is considered to produce only effects that can be observed some time following initial exposure. These may include impaired reproduction or growth, genetic effects, and other effects such as cancer, precancerous lesions, benign tumors, cataracts, skin changes, and congenital defects.
<i>cultural resources</i>	Historic properties, archaeological resources, and cultural items, such as (1) archaeological materials (e.g., artifacts) and sites that date to the prehistoric, historic, and ethnohistoric periods that are currently located on, or are buried beneath, the ground surface; (2) standing structures and/or their component parts that are more than 50 years of age or are important because they represent a major historical theme or era (e.g., Manhattan Project, Cold War); (3) structures that have an important technological, architectural, or local significance; (4) cultural and natural places, selected natural resources, and sacred objects that have importance for Native Americans; and (5) American folklife traditions and arts.
<i>decreaser grasses</i>	The grasses most eagerly sought after by grazing animals—they tend to decrease as grazing pressure increases. Most grasses are defined as being pasture increasers or decreasers.
<i>distribution coefficient</i> (K_d and R_d)	A ratio of the concentration of a chemical in soil to the concentration in water under equilibrium conditions (i.e., concentration in soil divided by the concentration in water).
<i>floodplain (including 100 and 500 year)</i>	The surface or strip of relatively smooth land adjacent to a river channel, constructed by the present river, and covered with water when the river overflows its banks. The floodplain is built of alluvium carried by the river during floods and deposited in the sluggish water beyond the influence of the swiftest current. A 100-year floodplain is the area of land that has a 1.0 percent or greater chance of being flooded in any given year. A 500-year floodplain is the area of land that has a 0.2 percent chance of being flooded in any given year.
<i>flow-and-transport modeling</i>	Use of computer software to try to simulate subsurface movement of water and chemicals to predict future conditions in an aquifer.

<i>fresh water</i>	The USGS classification of water based on the following concentration ranges of TDS: fresh water has less than 1,000 mg/L TDS, slightly saline water has 1,000 to 3,000 mg/L TDS, moderately saline water has 3,000 to 10,000 mg/L TDS, very saline water has 10,000 to 35,000 mg/L TDS, and brine has more than 35,000 mg/L TDS. In the EIS, fresh water in the basin fill aquifer beneath the Moab site is referred to as the upper portion of the aquifer that overlies the deeper briny ground water.
<i>fugitive dust</i>	(1) Dust emitted that does not pass through a stack, vent, chimney, or similar opening where it could be captured by a control device. (2) Any dust emitted other than from a stack.
<i>increaser grasses</i>	Grasses that become better established as grazing pressure increases because they are less palatable—they tend to increase as more favored species are grazed out. Most grasses are defined as being pasture increasers or decreasers.
<i>institutional controls</i>	Used to limit or eliminate access to, or uses of, land, facilities, and other real and personal property to prevent inadvertent human and environmental exposure to residual contamination and other hazards. These controls maintain the safety and security of human health and the environment and of the site itself. Institutional controls may include legal controls such as zoning restrictions and deed annotations and physical barriers such as fences and markers. Also included are methods to preserve information and data and to inform current and future generations of the hazards and risks.
<i>kilovolt amperes (kVA)</i>	A unit of electric measurement equal to the product of a kilovolt and an ampere. For direct current, it is a measure of power and is the same as a kilowatt; for alternating current, it is a measure of apparent power.
<i>legacy plume</i>	Site-related ground water contamination that is found in the freshwater layer of the ground water system and that would still be present even if no further contamination of the ground water takes place.
<i>long-term surveillance and maintenance</i>	A task performed by the DOE Office of Legacy Management through the DOE in Grand Junction, Colorado. The Office of Legacy Management provides expertise and resources necessary to manage low-level radioactive material disposal and impoundment sites after remedial action is complete.
<i>macrophytes</i>	Large aquatic plants.
<i>maximally exposed individual</i>	A hypothetical individual whose location and habits result in the highest total radiological or chemical exposure (and thus dose) from a particular source for all exposure routes (e.g., inhalation, ingestion, direct exposure).
<i>millirem (mrem)</i>	One thousandth of a rem (0.001 rem); see <i>rem</i> .

<i>mixing zone</i>	A limited portion of a body of water, contiguous to a discharge, where dilution is in progress but has not yet resulted in a concentration that will meet certain standards for all pollutants (from State of Utah surface water regulation R317-2-13).
<i>natural flushing</i>	Allowing the natural ground water movement and geochemical processes to decrease contaminant concentrations.
<i>PEIS</i>	<i>Programmatic Environmental Impact Statement for the Uranium Mill Tailings Remedial Action Ground Water Project</i> , prepared by DOE in 1996 for the UMTRA Ground Water Project. The PEIS is intended to serve as a programmatic planning document that provides an objective basis for determining site-specific ground water compliance strategies at the UMTRA Project sites.
<i>pH</i>	A measure of the relative acidity or alkalinity of a solution, expressed in a scale of 0 to 14, with a neutral point at 7. Acid solutions have pH values lower than 7, and basic (i.e., alkaline) solutions have pH values higher than 7. Because pH is the negative logarithm of the hydrogen ion (H^+) concentration, each unit increase in pH expresses a change in state of a factor of 10. For example, pH 5 is 10 times more acidic than pH 6, and pH 9 is 10 times more alkaline than pH 8.
<i>plant community</i>	A group of interacting plant species that share a common habitat, including incoming solar radiation, soil water, and nutrients, that recycle nutrients from the soil to living tissue and back again and that alternate with each other in time and space. Plant community is a general term that can be applied to vegetation types of almost any size or longevity. A plant association is a particular type of community that has been described sufficiently and repeatedly in several locations.
<i>PM₁₀</i>	Particulate matter in air small enough to move easily into the lower respiratory tract, defined as particles less than 10 micrometers in aerodynamic diameter.
<i>phytoremediation</i>	Use of plants to remove contaminants from ground water through root uptake. At the Moab site, tamarisk roots take in nitrogen compounds (e.g., ammonia and nitrate) from ground water.
<i>phreatophyte</i>	Deep-rooted plants that obtain water directly from the water table or a permanent ground water source.
<i>picocurie</i>	A unit of radioactivity equal to one trillionth (10^{-12}) of a curie. A curie is a unit of radioactivity equal to 37 billion nuclear disintegrations per second.
<i>plume</i>	The volume of contaminated ground water originating at a contaminant source such as the tailings pile at the Moab site and migrating downgradient.

<i>probable maximum flood</i>	The hypothetical flood that is considered to be the most severe reasonably possible flood, based on the comprehensive application of maximum precipitation and other hydrological factors favorable for maximum flood runoff (e.g., sequential storms and snowmelts). It is usually several times larger than the maximum recorded flood.
<i>radium-226</i>	A radioactive metallic element in the decay chain that begins with uranium-238 and ends with lead-206, a stable isotope. Radium-226 has a half-life of about 1,600 years and decays to radon-222, an inert gas.
<i>radon-222</i>	A radioactive inert gas in the decay chain that begins with uranium-238 and ends with lead-206, a stable isotope. Radon has a half-life of about 3.8 days and decays into polonium-218, a metallic ion.
<i>reasonable maximum exposure</i>	The highest exposure that is reasonably expected to occur at a site (EPA risk assessment guidance) (exposure is defined as the contact of an organism with a chemical or physical agent).
<i>recharge areas</i>	Areas in which water on the ground surface (e.g., precipitation or a water body) infiltrates downward and replenishes an aquifer.
<i>rem</i>	A unit of radioactive dose equivalent, equal to the absorbed dose in tissue multiplied by an appropriate quality factor and possibly other modifying factors. Derived from “roentgen equivalent man,” referring to the dose of ionizing radiation that will cause the same biological effect as one roentgen of X-ray or gamma ray exposure.
<i>record of decision (ROD)</i>	A public document that records a federal agency’s decisions concerning a proposed action for which the agency has prepared an EIS. The ROD is prepared in accordance with the requirements of the Council on Environmental Quality NEPA regulations (40 CFR 1505.2). A ROD identifies the alternatives considered in reaching the decision, the environmentally preferable alternatives, factors balanced by the agency in making the decision, whether all practicable means to avoid or minimize environmental harm have been adopted, and, if not, why they were not.
<i>rim syncline</i>	A local depression that develops between salt diapirs resulting from movement of underlying salt toward the diapir structure.
<i>river incision</i>	The geologic process by which the Colorado River cuts down through the bedrock sandstone outcroppings located upstream and downstream of the Moab site.
<i>river mile</i>	The distance of a point on a river measured in miles from the river’s mouth along the low-water channel.

<i>saline</i>	The USGS classification of water based on the following concentration ranges of TDS: fresh water has less than 1,000 mg/L TDS, slightly saline water has 1,000 to 3,000 mg/L TDS, moderately saline water has 3,000 to 10,000 mg/L TDS, very saline water has 10,000 to 35,000 mg/L TDS, and brine has more than 35,000 mg/L TDS. In the EIS, saline water in the basin fill aquifer beneath the Moab site is referred to as salty ground water, which is salty mostly from dissolution of evaporite minerals in the Paradox Formation.
<i>salt-cored anticline</i>	An anticline in which salt (from evaporating seawater, including other materials such as silt and clay) has flowed upward and formed the core of the anticline.
<i>salt diapir</i>	A dome or elongate anticlinal fold in which the overlying rocks have been ruptured or pierced by the squeezing out of low-density salt deposits and their resulting upward movement.
<i>settling</i>	The gradual compacting and lowering of the height of a tailings pile. It is caused by the weight of the pile squeezing liquids from slimes downward and out of the pile.
<i>slimes</i>	The fine-grained fraction of the mill tailings that consists of clay- and silt-sized grains; defined as material that will pass through a 200-mesh Tyler-equivalent sieve.
<i>steady-state conditions</i>	Conditions that exist when a system is in equilibrium and that do not change significantly over time (e.g., ground water constituent concentrations that remain essentially constant).
<i>subsidence</i>	The geologic process that is lowering the entire tailings pile at the Moab site because of ground water dissolving the Paradox Formation salt deposits that underlie the Moab-Spanish Valley.
<i>supplemental standards</i>	A narrative exemption from remediating ground water to prescriptive numeric standards (background concentrations, maximum concentration limits [MCLs], or alternate concentration limits [ACLs]), if one or more of the eight criteria in 40 CFR 192.21 are met. At the Moab site, the applicable criterion is limited-use ground water, (40 CFR 192.21[g]), which means that ground water has naturally occurring total dissolved solids (TDS) concentrations greater than 10,000 milligrams per liter (mg/L), and widespread TDS contamination is not related to past milling activities at the site. The PEIS (DOE 1996) also discusses supplemental standards within the context of “no ground water remediation.” However, guidance in 40 CFR 192.22 directs that where the designation of limited-use ground water applies, remediation shall “assure, at a minimum, protection of human health and the environment.”
<i>tailings pore fluids</i>	Water in the pore spaces between the mineral grains that make up the tailings pile at the Moab site. Fluids can be remnants of fluids disposed of in the former tailings ponds or precipitation that seeped into the pile.

<i>total dissolved solids (TDS)</i>	A measurement of the nonvolatile constituents dissolved in water. TDS is measured by filtering a water sample through a glass fiber filter having an average pore size of 1 micrometer, evaporating a measured volume of the filtered water to dryness at 105 degrees Celsius (°C), then drying the residue to a constant weight at 180 °C. The result is expressed in milligrams of residue per liter of water sample. Water with more than 2,000 to 3,000 mg/L TDS is generally too salty to drink. TDS concentration of seawater is about 35,000 mg/L.
<i>traditional cultural property (TCP)</i>	A significant place or object associated with historical and cultural practices or beliefs of a living community that is rooted in that community's history and is important in maintaining the continuing cultural identity of the community.
<i>UMTRA Project</i>	Uranium Mill Tailings Remedial Action Project that was approved by Congress in 1978 and gave DOE authority to clean up inactive uranium-ore processing sites and vicinity properties, including ground water.
<i>uranium</i>	A radioactive, metallic element that is the heaviest of the naturally occurring elements. Uranium has 14 known isotopes, of which uranium-238 (half-life of about 4.5 billion years) is the most abundant. Uranium-235 (half-life of about 700 million years) is used as a fuel for nuclear fission.
<i>vicinity properties</i>	Properties, either public or private in the vicinity of designated uranium-ore processing sites, that are believed to be contaminated with RRM and may be eligible for characterization and cleanup under the UMTRA Project.
<i>wetland</i>	Areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
<i>working level</i>	A measure of radon daughter concentration, consisting of any combination of short-lived radon-222 decay products in 1 liter of air that result in the ultimate emission of alpha particle energy of 1.5×10^5 million electron volts.
<i>young-of-the-year</i>	Juvenile fish less than 1 year old.
<i>zooplankton</i>	The animal constituent of the small plants and animals that float or drift in fresh water, mainly insects or fish.

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